

**A
M
I
T**

**ARCHÄOLOGISCHE
MITTEILUNGEN AUS
IRAN UND
TURAN**

**Band 41
2009**

Separatum

The Neolithic to Chalcolithic transition in the Qazvin Plain, Iran: chronology and subsistence strategies

By Hassan Fazeli Nashli, Amir Beshkani, Armineh Markosian, Hengameh Ilkani, Rahmat Abbasnegad Seresty and Ruth Young

Keywords: Neolithic – Transitional Chalcolithic; Qazvin Plain; relative chronology; absolute chronology; Čahār Bone; Ebrāhīm Ābād; animal domestication; agriculture

Introduction

The transition from pastoral hunting and gathering communities to sedentary agrarian economies has been a major focus of archaeological research on the Iranian central plateau since the 1960s.¹ At the end of the sixth millennium BC, the social organization of self-sufficient and independent communities in this region changed to the more complex social systems of the Chalcolithic period. The markers of rising complexity in the Neolithic to Chalcolithic transition include: the herding of domestic cattle, sheep and goat,² the cultivation of barley and bread wheat using irrigation,³ the development of long-distance trade,⁴ complex ritual activities (e.g. the shrine at Zāge); social differentiation in mortuary practices; specialized craft areas for increasingly standardized craft production,⁵ and new production techniques such as wheel thrown ceramics.⁶ All these advances support the idea of ranked societies arising within the communities of the Iranian central plateau between ca. 5300 BC and 4600 BC.

While a number of recent excavations have been conducted to investigate the Chalcolithic societies of the central Plateau,⁷ our information about the development of pre-Chalcolithic societies is less complete. Archaeological investigations within the Qazvin Plain focusing on the Neolithic have been underway since the 1970s.⁸ Decades later, there is still no evidence for a Mesolithic period in this region, nor any new information about the origins of agricultural societies. Recent settlement survey and excavations at Češme 'Ali⁹ and Tappe Pardis¹⁰ with-

in the Tehrān Plain failed to find any evidence of earlier phases of the Neolithic. By using ¹⁴C-dated, stratigraphic excavations, it is clear that the earliest occupation of the Tehrān Plain was no earlier than ca. 6200 BC.

In 2001, a five year archaeological excavations and settlement survey began to study socioeconomic development of the Neolithic to the Bronze Age societies in the Qazvin Plain. The project also aimed to propose new chronological sequences for the Neolithic, Chalcolithic and Bronze Age of the plain based on relative and absolute dating methods. In spite of very important data ascribed from the 1970s excavations of Zāge (for example the existence of a shrine, social differentiation in mortuary practices, long distance trade and specialisation in ceramic production etc.), Qabrestān (with a large area of ceramic and metal workshops) and Sagzābād, the resulting proposed chronology faced many problems.¹¹ S. Malek Shahmirzadi, E. O. Negahban and Y. Majidzadeh suggested that the site of Zāge covers the early sixth millennium BC (or even seventh millennium BC), while the results of the 2001 excavation of Zāge indicate that the site occupation ranges from 5300 to 4600 BC. In 2002, re-excavation of Qabrestān showed that the site was occupied ca. 4400–4300 BC and ended ca. 3500–3300 BC. Re-excavation of Sagzābād suggests that the site was occupied ca. 1700 BC, which equates to the latest phase of the Bronze Age in this region. The result of 30 ¹⁴C estimates and stratigraphic information from the above three sites is remarkable: 1) Zāge is a Chalcolithic site, and not as suggested a Neolithic occupation 2) Qabrestān chronology was completely revised, 3) there is a big gap between the Qabrestān abandonment and the Sagzābād occupation (more than 1500 year) and 4) finally there is a gap between the three above sites with no continuity of site occupation.

Consequently, extensive archaeological survey was undertaken in 2003 in order to understand early occupation within the plain and to identify further sites for excavation. 23 new Neolithic, Chal-

¹ McCown 1942; Majidzadeh 1976; Malek Shahmirzadi 1977; Majidzadeh 1981; Tala'i 1984; Malek Shahmirzadi 1990; Zeder 2005; Fazeli et al. 2007; Young/Fazeli 2008.

² Mashkour et al. 1999.

³ Gillmore et al. 2009.

⁴ Fazeli Nashli/Abbasnegad Sereshti 2005.

⁵ Fazeli et al. 2007.

⁶ Vidale et al. n.d.

⁷ Coningham et al. 2004; Fazeli et al. 2004; Fazeli et al. 2005; Malek Shahmirzadi 2006.

⁸ Negahban 1977; Negahban 1979.

⁹ Schmidt 1935; Schmidt 1936; Fazeli et al. 2004.

¹⁰ Fazeli et al. 2007.

¹¹ Fazeli et al. 2005.

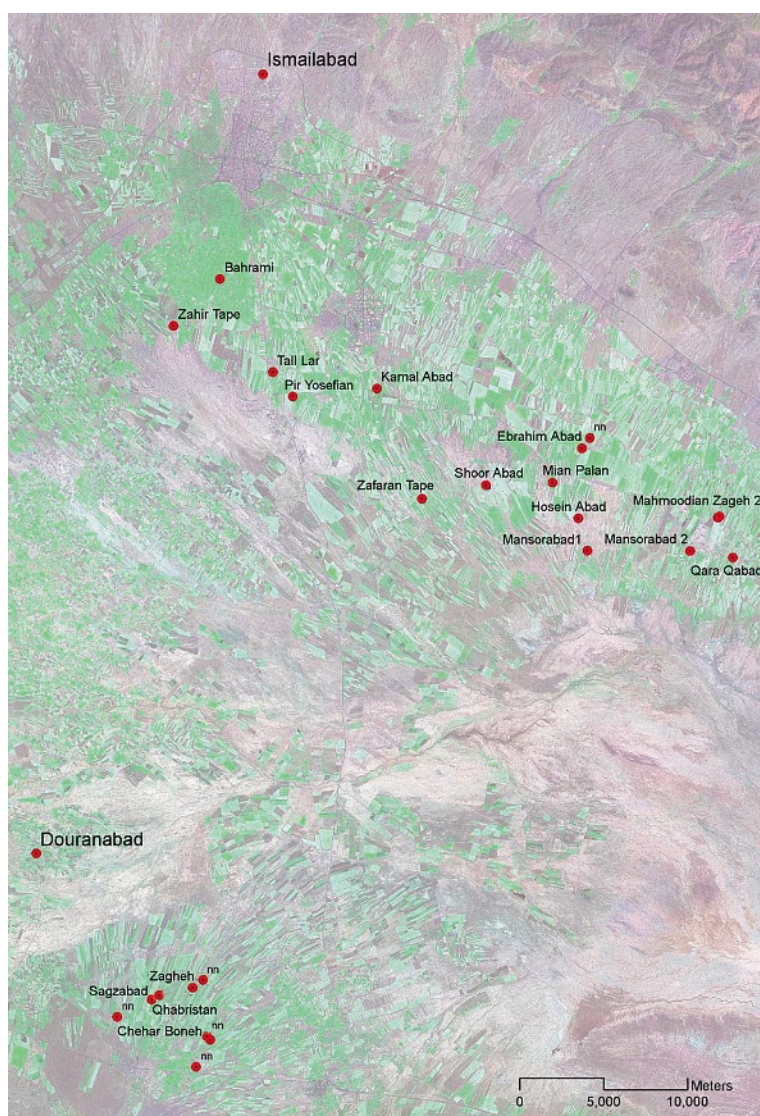


Fig. 1
Distribution of
prehistoric sites on
the Qazvin Plain

colithic and Bronze Age sites were found, of which the two sites of Tappe Čahār Bone and Ebrāhīm Ābād (identified as Neolithic) were targeted for stratigraphic excavations in 2006 (**Fig. 1**). As noted above, the chronological results of the Zāġe 2001 and Qabrestān 2002 excavations have been published¹² and we hope to publish the chronological results of the Sagzābād excavation 2008 in the near future. However, after 70 years of archaeological research within the Iranian central plateau, this paper presents material about earlier Neolithic settlement history, a topic which has not been studied previously. In this paper we aim to characterise the

chronology of the Neolithic and Chalcolithic periods, and indicate when the Neolithic period ended and the Chalcolithic period started. We also suggest this new chronological study could be linked to other regions of the central plateau of Iran, to allow a greater perspective of socioeconomic development. The botanical and animal bones analysis from the two new sites presents more details for the Neolithic and the Chalcolithic periods.

The Neolithic and early Chalcolithic period on the Qazvin plain

Tappe Čahār Bone

Čahār Bone was identified during the settlement survey undertaken in 2003,¹³ and excavated in the summer of 2006 over two months. Located at 1279 m above sea level, it lies 3.3 km to the south-east of Zāġe, and 4.2 km southeast of Qabrestān. Lying within a shallow depression, it covers an area of 2000 m² – or 4000 m² including surrounding scatters – and is being encroached upon by agriculture (**Fig. 2**). There are low ridges at the edge of the depression which may represent structural remains. Painted Buff and Red Ware sherds were visible upon the surface, along with chipped stone tools including blades, debitage and cores. With the potential for earlier occupation sequences, eight 2 × 2 metres trenches were excavated during 2006 in different parts of the site (**Fig. 3**). However, despite two months of excavations, few architectural remains or coherent contexts were identified. Instead, we found a series of cultural contexts which were interspersed with natural accumulations. In terms of artefacts, only pottery, lithics and animal bone were recovered. The following paragraphs outline the stratigraphy of the three trenches.

Trench I was located to the west of the site, on a shallow slope. Initially a 5 × 5 metre area was opened, and topsoil removed. Subsequently, a smaller 2 × 2 metre trench was excavated to a depth of 4.41 m with a total of 14 contexts – eight cultural contexts, five natural contexts, and the topsoil. The natural contexts, interspersed within the cultural strata, were composed of gravels and fine sand suggesting that the site underwent periodic sedimentation from riverine water (**Fig. 4**). However, no architectural remains were identified and only ceramics, bone and lithics were recovered.

Trench II was located 20 metres away in the northwestern corner of the site, and measured 2 × 2 metres and reached natural soil at a depth of

¹² Fazeli et al. 2005.

¹³ Fazeli et al. 2004.

5.1 m. A total of 24 contexts were recorded, with ten cultural contexts again interspersed with contexts of gravel and sand. However, there was a greater density of artefacts recovered from Trench II, including pottery wasters and traces of burnt soil and ash.

Trench III was located in the eastern corner of the site, 15 metres from Trench II, measured 2×2 metres and reached natural soil at a depth of 3.55 m. A total of 18 contexts were excavated with pottery, bone and lithics recovered. Again, however, no architectural remains were identified, and all of the artefacts were recovered from the upper eight contexts, two metres below the surface.

Due to the scarce nature of finds and absence of architectural features, a further trench – Trench VI – was opened 10 metres away. It contained fourteen contexts, including ten cultural contexts within the 2.81 m depth. One context in particular, context 608, was a hearth surrounded by burnt clay and covered in ash. The context was relatively compacted and composed entirely of fired clay and brick. Additionally, context 602 comprised 80% burnt soil with a large amount of burnt animal bone. However, again there was little in the way of architectural remains or artefacts other than ceramic, lithics and bone. As such, this led to the preliminary suggestion that Čahār Bone was a short-lived, seasonally occupied settlement site.

Tappe Ebrāhim Ābād

Due to the paucity of evidence from the excavations at Čahār Bone, a second Neolithic site identified within the survey – Tappe Ebrāhim Ābād – was targeted for further excavation. The site was excavated in the autumn of 2006 over two months. Located 20 km to the southeast of Qazvin, close to the foothills of the Alborz Mountains, the site measures 250×250 metres and rises to a height of eight metres above the level of the plain (Fig. 5). The site is surrounded by agricultural fields, and is referred to as both Tappe Ebrāhim Ābād and Hezār Jolfa – after the two nearby villages. The presence of Sialk I Buff Ware (a Late Neolithic ceramic which is regionally distributed within the Tehrān and the Kāšān area), Češme ‘Ali Fine Ware, Zāḡe Standard Ware and Zāḡe Painted Ware on the surface of the site indicated the potential for a good chronological sequence. It is also the first recorded presence of Sialk I pottery (from the Kāšān region) within the Qazvin Plain. Its occurrence is already known at the sites of Češme ‘Ali,¹⁴ Tappe Pardis,¹⁵ Tappe Sadeq



Fig. 2
General view of Tappe
Čahār Bone



Fig. 3
Tappe Čahār Bone.
View of the section
of the excavated
trenches of area I

¹⁴ Fazeli et al. 2001.

¹⁵ Coningham et al. 2004.

uring 3×3 metres in the centre of the mound; Trench II also measuring 3×3 metres on the eastern slope; and Trench III measuring 2×2 metres on the western slope (Fig. 6).

Trench I was opened after initially clearing a 5×5 metre area of topsoil, and was excavated to a

depth of 2.5 m, after which it was stepped to 2×2 metres to a depth of 9.5 m, and then 1×1 metres until virgin soil was reached some 11.25 m from the top (Fig. 7). A total of 70 contexts were recorded with four distinct architectural phases. The first architectural phase was evident within context 107, which comprised two curvilinear courses of mudbrick adjacent to a robber pit (Fig. 8). However, the pit had cut through the greater part of the feature. The second phase was represented by a series of scattered mudbricks within context 137 measuring 0.25×0.20 m and 0.06 m high, but in no discernable pattern. Similarly, the third architectural phase was represented by a scatter of mudbricks within context 141. The fourth and final phase was visible within contexts 144 to 147. Context 144 consisted of mudbricks within an ashy layer, context 145 was collapsed mudbrick, context 146 comprised three adjacent mudbricks, and context 147 was a layer of compacted clay containing mud-



Fig. 4
Tappe Čahār Bone.
Close-up view of
cultural layers located
between sedimentary
natural layers

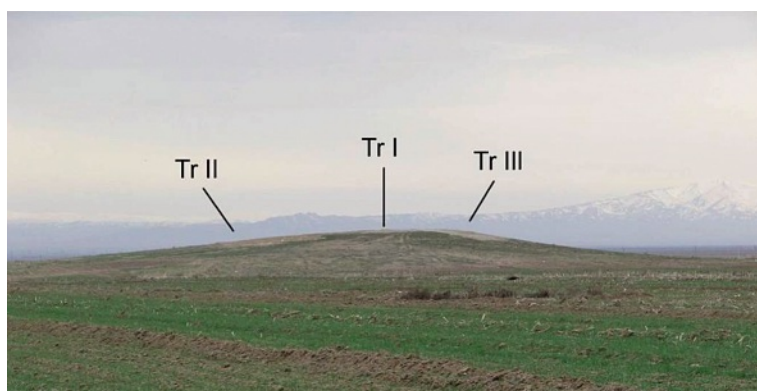


Fig. 5
Tappe Ebrāhim Ābād.
General view of the site



Fig. 7
Tappe Ebrāhim Ābād. View of Trench I

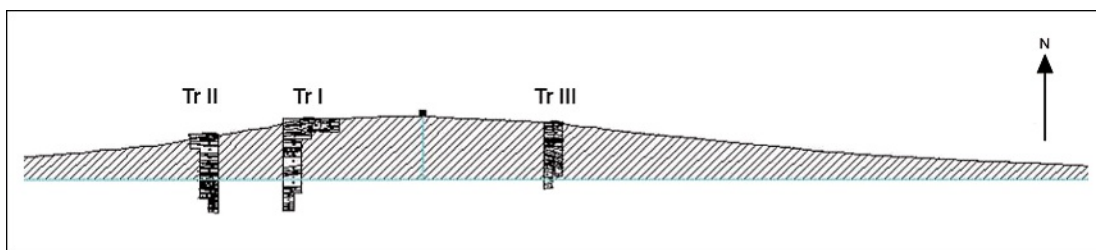


Fig. 6
Tappe Ebrāhim Ābād.
Location of trenches I,
II and III

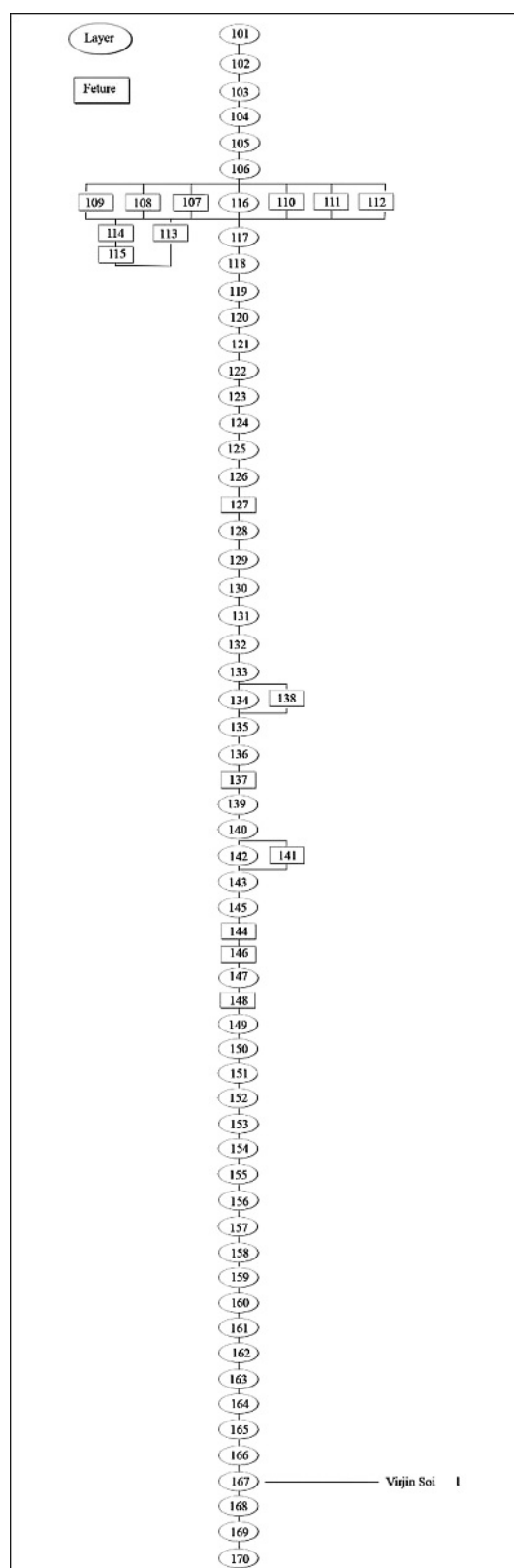


Fig. 8

Tappe Ebrāhim Ābād. Harris Matrix of Trench I



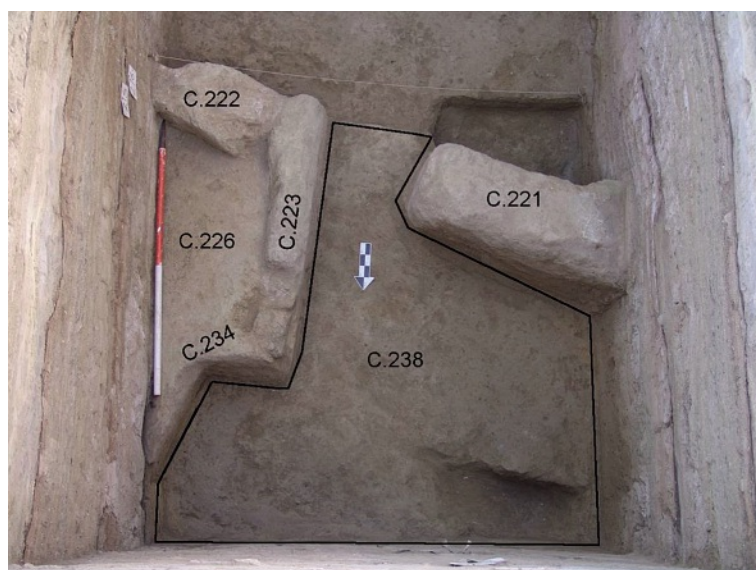
Fig. 9

Tappe Ebrāhim Ābād.
General view of
Trench II

bricks. A total of 6476 ceramics were recovered from the trench, including 1641 sherds used to pave a floor surface in context 115. Small finds include awls, sling-stones and other clay materials such as animal figurines.

Trench II was located on the western slope of the mound, producing a total of 78 contexts, and was 8.5 m deep (Figs. 9; 11). Only one architectural phase was identified – a floor level, packed mud and brick walks and brick collapse (Fig. 10). Also, one human skeleton was found in this trench

Fig. 10

Tappe Ebrāhim Ābād.
Architectural remains
in Trench II

Trench III was situated on the eastern slope, eight metres from Trench I, and contained 65 contexts within 7.24 m of deposits (**Fig. 13**). Like Trench I, four architectural phases were identified. Phase I comprises contexts 309, 311 and 317 – a gravel layer, brick rubble and a small wall measuring 0.12 m wide and 0.7 m high. The second phase, contexts 342 and 345, consists of a wall and cluster of bricks, presumably collapse (**Fig. 14**). However, the small trench size meant that it was not possible to distinguish any alignments. The special finds from trench III include spindle whorls, figurines, bone awls and stone objects.

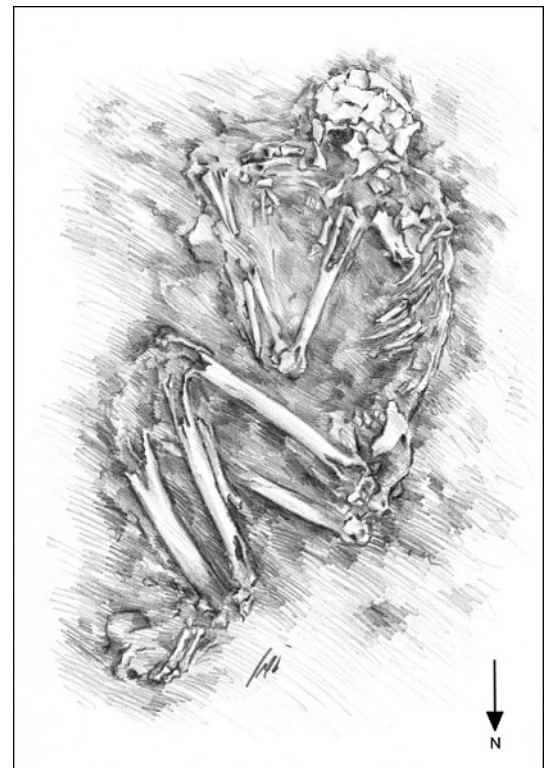


Fig. 12
Tappe Ebrāhim Ābād. Burial in Trench II

The excavation of these two new sites has provided us with secure stratigraphic data which can be analysed in order to further understand the settlement history of the region. It has also provided us appropriate samples for scientific date estimates and relative dating through ceramic typologies, and this in turn has allowed us to revise and update the result of past chronological studies of the Iranian Central Plateau.

Chronology

One of the stated aims of the Qazvin Plain research was to identify the origins of the Neolithic both temporally and artefactually. Thus, the stratigraphic excavations at Čahār Bone and Ebrāhim Ābād, combined with recent excavation at Tappe Pardis,¹⁶ Češme ‘Ali,¹⁷ Zāġe and Qabrestān¹⁸ have provided us with the opportunity to revise the proposed chronological sequence presented in 2001.¹⁹ As mentioned earlier, radiocarbon dates from Zāġe place the lower levels much later than expected at 5200 BC,²⁰ and they are therefore interpreted as Transitional Chalcolithic in nature. However, the ceramic variability at Čahār Bone and Ebrāhim Ābād have allowed us to divide the Late Neolithic (6000–5200 BC) into two sub phases – I and II covering 400 years each and with distinct artefactual indicators. The Transitional Chalcolithic covers the period from 5200–4300 BC, and we suggest the first phase of the Transitional Chalcolithic period is a time of social differentiation and economic change with the development of full time specialisation, long distance trade and ideological domination. Just like the Neolithic, the Transitional Chalcolithic period covers a long term of ca. 900 years of occupation. Therefore it is critical to note that all of the horizontal excavations which were carried out at the sites of Zāġe, Sialk and Pardis cover the time period of the earlier phases of fifth millennium BC and really for the next phase of 4600–4300 BC we have only access to limited evidence from vertical excavations and surface results. It is obvious that the designs of key ceramics types show slight changes during the second phase of the Transitional Chalcolithic period and we hope that future research will provide evidence for other aspects of change.

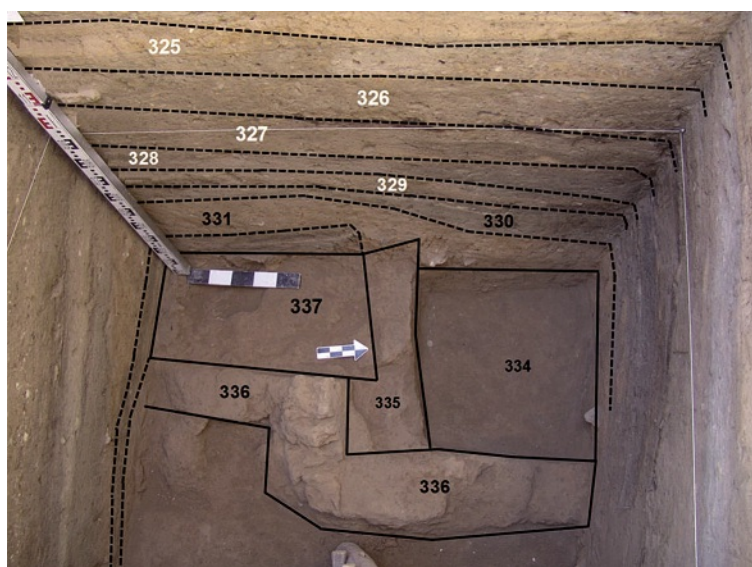


Fig. 13
Tappe Ebrāhim Ābād.
General view of
trench III

Late Neolithic I and II

Seventeen charcoal samples from Čahār Bone were analysed at Oxford University. However, two of the samples failed, leaving six usable dates for the Late Neolithic I (**Tab. 1**) and nine dates from the Late Neolithic II (**Tab. 2**). A sample from virgin soil in Trench III at Čahār Bone provided a date of 6062–5976 BC, and we suggest that the Late Neolithic I dates from 6000–5600 BC. A further nine dates were obtained from samples from Ebrāhim Ābād's five metres of archaeological deposit relating to the Late Neolithic II (**Tab. 3**), which we date to 5600–5200 BC.

Transitional Chalcolithic I

On the basis of the radiocarbon dates from Ebrāhim Ābād, combined with the previous results from Tappe Pardis, Češme ‘Ali and Zāġe, we suggest that the Transitional Chalcolithic I begins at 5200 BC. The radiocarbon dates from Zāġe demonstrate a date range of 5370–5070 BC, whilst dates from the other three sites are shown below in **Tables 4, 5** and **6**.

As mentioned earlier, one of the key archaeological problems within the Central Iranian Plateau is the lack of evidence for the Mesolithic and also Early Neolithic periods. We hoped that Čahār Bone or Ebrāhim Ābād might provide evidence of aceramic Neolithic occupations. However, whilst both sites have provided us with securely dated stratigraphies and architectural and artefactual sequences over 800 years of occupation, neither site demon-

¹⁶ Coningham et al. 2004.

¹⁷ Fazeli et al. 2004.

¹⁸ Fazeli et al. 2005.

¹⁹ Fazeli Nashli 2001, see Tab. 7.

²⁰ Fazeli et al. 2005; Mollasalehi et al. 2006.

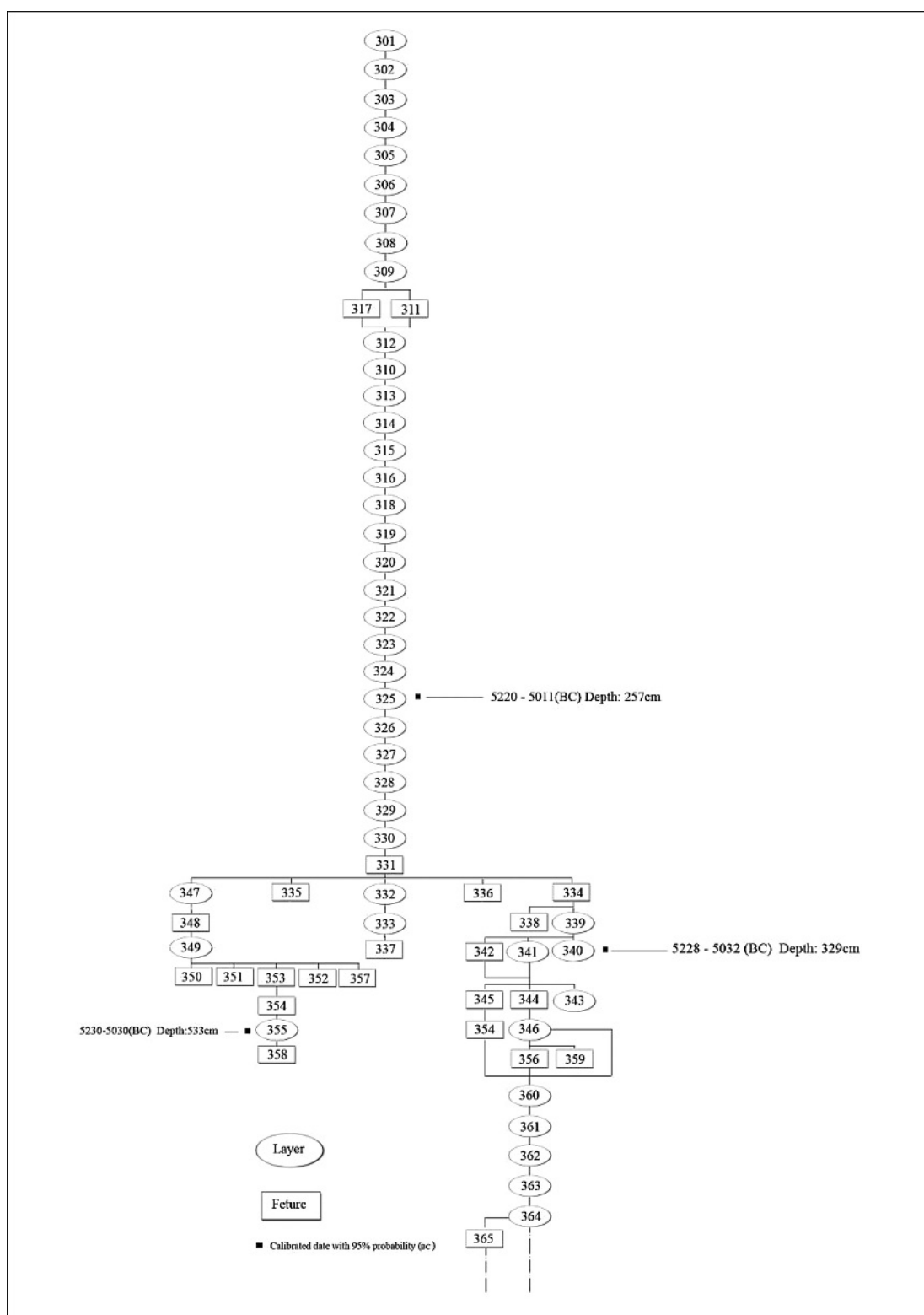


Fig. 14
Tappe Ebrāhim Ābād.
Harris matrix of
Trench III

Lab Number	Depth (cm)	Trench No	Context No	Results (BP)	Calibrated date with 95% probability (BC)
OxA-17739	334	I	110	6858 ± 35	5666–5812
OxA-17740	334	I	109	6919 ± 35	5728–5882
OxA-17741	334	I	109	6909 ± 35	5724–5878
OxA-17742	246	III	306	7123 ± 35	5976–6062
OxA-17743	246	III	306	7035 ± 36	5843–5998
OxA-17744	64	IV	403	6835 ± 37	5642–5792

Tab. 1
Tappe Čahār Bone.
Late Neolithic I
radiocarbon dates

Calibrated date with 95% probability (BC)	Results (BP)	Context No	Trench No	Depth (cm)	Lab Number
5056–5232	6210 ± 35	508	V	64	OxA-17704
5222–5382	6345 ± 34	508	V	64	OxA-17745
5202–5308	6241 ± 34	508	V	64	OxA-17746
5206–5321	6267 ± 34	510	V	140	OxA-17747
5217–5362	6311 ± 36	510	V	140	OxA-17748
5217–5358	6308 ± 35	510	V	140	OxA-17749
5294–5386	6355 ± 35	512	V	191	OxA-17750
5007–5221	6177 ± 36	606	VI	102	OxA-17751
5210–5353	6289 ± 37	702	VII	82	OxA-17752

Tab. 2
Tappe Čahār Bone.
Late Neolithic II
radiocarbon dates

Calibrated date with 95% probability (BC)	Results (BP)	Context No	Trench No	Depth (cm)	Lab number
5206–5320	6265 ± 33	214	II	304	OXA-17602
5206–5320	6266 ± 33	238	II	384	OXA-17604
5212–5326	6291 ± 33	239	II	413	OXA-17605
5218–5378	6335 ± 35	241	II	434	OXA-17606
5372–5518	6493 ± 34	244	II	486	OXA-17603
5478–5566	6579 ± 33	266	II	722	OXA-17607
5011–5220	6176 ± 35	325	III	257	OXA-17736
5032–5228	6191 ± 35	341	III	323	OXA-17737
5030–5230	6201 ± 34	355	III	533	OXA-17738

Tab. 3
Tappe Ebrāhim Ābād.
Late Neolithic II
radiocarbon dates

Trench H7 (number of layers)	Calibrated date with 95% probability (BC)	Calibrated date with 95% probability (BC) Based on stratigraphy
56	4940–5260 BC	5000–5260 BC
55	4950–5260 BC	4980–5210 BC
50	4990–5290 BC	4940–5150 BC
33	4600–4850 BC	4740–4910 BC
32	4720–4950 BC	4770–4950 BC

Tab. 4
Tappe Češme 'Ali. Tran-
sitional Chalcolithic I
radiocarbon dates

Tab. 5

Tappe Ebrāhim Ābād.
Transitional Chalcolithic I radiocarbon dates

Calibrated date with 95% probability (BC)	Results (BP)	Context No	Trench No	Depth (cm)	Lab Number
4882–5060	6068 ± 33	209	II	122	OXA-17600
5061–5180	6220 ± 33	210	II	129	OXA-17600

Tab. 6

Tappe Pardis. Transitional Chalcolithic I radiocarbon dates

Lab No	Trench	Context No	Calibrated date with 95% probability (BC)
OxA-14745	II	1014	4910 BC–5210 BC
OxA-14746	II	1015	5190 BC–5310 BC
OxA-14747	II	1017	5050 BC–5310 BC

strated evidence of this early occupation. Chronologically (**Tab. 7**), we propose that Tappe Čahār Bone is related to Late Neolithic I (6000–5600 BC) and II (5600–5200 BC), whilst Ebrāhim Ābād dates to the Late Neolithic II (5600–5200 BC) and Transitional Chalcolithic I (5200–4600 BC). We suggest the second phase of the Transitional Chalcolithic period started ca. 4600 and ended 4300 BC. Previous evidence of such subdivision comes from the stylistic analysis of the Češme ‘Ali ceramics which indicated

that a great deal of change took place in ceramic style. As such, both sites provide us with detailed ceramic sequences from Late Neolithic I through to Transitional Chalcolithic supported by radiocarbon dates.

Ceramics

Late Neolithic I

From the chronological perspective, the Late Neolithic I phases of the Qazvin Plain can be characterized with ceramics which were found only at Čahār Bone. Although the surface colour and types of paint cannot be compared with the other contemporary sites such as Tappe Sarāb and Hajji Firuz,²¹ in respect of manufacturing technology (handmade

Period BCE		The Qazvin plain	The Tehran Plain	The Kashan Plain	Damghan/Shahrud
Early Bronze II (Kura-Araxes) 2900–2000		Šizār, Dorānābād	Arasto Tappe	?	Hesār III
Early Bronze I (Proto-Literate) 3400–2900		Šizār	Tappe Sofalin* Sogali*	Arismān C Sialk IV	Hesār IIB
Late Chalcolithic 3700–3400		Qabrestān III–IV* Esmā’il Abād* Šizār	Češme-‘Ali* Tappe Pardis* Sofalin* Sogali*	Arismān B Sialk South III 6–7	Hesār IIA
Middle Chalcolithic 4000–3700		Qabrestān II Šizār	Češme-‘Ali* Tepe Pardis Sogali*	Sialk South III 4–5	Hesār IC
Early Chalcolithic 4300–4000		Qabrestān I	Češme-‘Ali* Tappe Pardis Sogali*	Sialk South III 1–3	Hesār IA-IB*
Transitional Chalcolithic	Late 4600–4300	?	Češme-‘Ali* Esmā’il Abād* Kara Tepe* Sogali *	?	Šir Ažiān* Aq Tappe*
	Early 5200–4600	Ebrāhim Ābād Zāge	Češme-‘Ali Tepe Pardis Esmā’il Abād	Sialk North*	“Češme-‘Ali” Phase*
Late Neolithic	Late 5600–5200	Čahār Bone Ebrāhim Ābād	Češme-‘Ali* Tappe Pardis	Sialk North I 4–5*	Sang-e Čakmāg
	Early 6000–5600	Čahār Bone	?	Sialk North I 1–3*	“Djeitun” Phase

* Without ¹⁴C dates

Tab. 7
Comparative
chronology of the
Qazvin plain, based
upon evidence from the
excavated sites

²¹ Voigt/Dyson 1992.

with sequential slab technique), selection of clay raw materials using a non-standard clay, and firing in an open kiln, there is a degree of similarity with the above mentioned sites. We suggest that the first phases of ceramic Neolithic of the Qazvin plain prehistory not only have a local character, but also was not found or used even in the northern parts of the region. For example the ceramic of this site was not found in Ebrāhīm Ābād.

The ceramics of Čahār Bone can be divided into two groups – simple buff and painted buff wares. However, due to a lack of control within the firing process, some sherds are a light greenish grey on the exterior, and in other cases the surface colour is not consistent. Within the lower layers there are grey ware sherds (again, a result of poorly controlled firing) and sherds with smoky surfaces, indicating the use of open kilns. Due to lack of control over the firing process, the vessels are sometimes fired green or completely turned into porous, anomalous wasters. Common forms include: jars with thick everted rims; bowls with concave base and carination on the body; storage jars with flat bases; bowls with flat bases; jars with thick handles; bowls with small round bases and tall rims; vessels with basket handles; and large plates with carinated round bases. However, there are numerous inconsistencies within the ceramics of Čahār Bone; in some cases the rims are thicker than the body, whereas in others the body varies in thickness. Vessel mouths are both open and closed, and often the vessel sides are vertical. In other vessels there is a smooth carination from base to rim, and this seems to be characteristic of the site. Bases tend to lack consistency, probably arising from technological inadequacies, and tend to be concave or convex and rounded. A number of vessels have low walls and flat bases resembling coarse trays. Two types of handle are represented: basket handles sometimes with applied decorations; and solid cylindrical handles that are not consistent in thickness or diameter. Handles may have been modelled separately and later attached to vessels, or may have been part of basket forms.

Motifs generally include geometric designs, with bands of triangles and lozenges; cross-hatchings; checkers with square, triangle or lozenge patterns; basket impressions; and steps most common (Fig. 15). The interior surface is sometimes decorated with scalloped motifs resembling waves. In most cases the interior surface is painted, and often both exterior and interior surface are decorated. Some of the vessels, such as round trays, have decorated interior bases – in particular positive and negative spaces created by using dark slips on white backgrounds. Triangle motifs are most prevalent, with the base of the triangle running along the

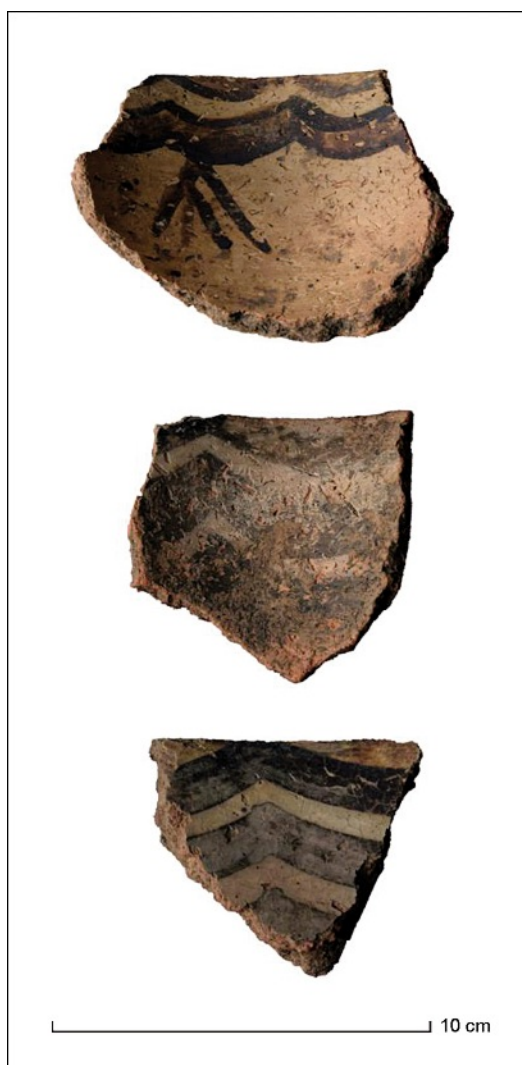


Fig. 15
Tappe Čahār Bone.
Painted Pottery
fragments

rim and pointing downwards, and in others vice versa. Just like the manufacturing process, the ceramic motifs of Čahār Bone represent early stages of pottery decoration, and the first attempts of potters to apply decorative design to ceramics. However, there is not a single example of composite designs and all have only one single element, while in the later period during the Neolithic phase II period use of complex design becomes predominant.

Ceramic production was simple at Čahār Bone. Vessels were handmade and shaped using a sequential slab method, occasionally resulting in thicker parts of the body. Inconsistent diameters along the body, the uneven nature of some of the rims, an absence of any evidence for the use of potter's wheel, continuous impressions of potter's fingers, and asymmetry within some of the recon-

structed vessels all indicate that the vessels are handmade. The ceramics are generally coarse and thick, but medium or fine wares were also made. Both exterior and interior surfaces were covered with a single coat of slip. The majority of recovered sherds have organic tempers, sometimes visible within the surface and section of the sherd. Thicker vessels use coarser chaff, whilst finer sherds use smaller organic material. However, fine inorganic temper was used in a limited number of cases. The clay is poorly levigated, which is again characteristic of the Čahār Bone ceramic assemblage.

Late Neolithic II

Tappe Ebrāhim Ābād covers the Late Neolithic II and Transitional Chalcolithic I cultural materials. Eight main groups of Simple Buff Ware, Simple Red Ware, Ebrāhim Ābād Painted Ware, Black on Red Painted Ware, Sialk I Ware, Češme 'Ali (Sialk II) Ware, Zāge Crusted Ware and Zāge Painted Ware were found. The first five are characteristic of the Late Neolithic, whilst the latter three are more typical of Transitional Chalcolithic. However, they are not mutually exclusive and it is important to note that Simple Buff and Simple Red Ware occur during both the Neolithic and Chalcolithic periods, whilst Ebrāhim Ābād Painted Ware is present only during the Neolithic phase. We describe briefly the five ceramic types of the Late Neolithic II phases which are different from the Neolithic I phases. Variability in ceramic production such as painted and unpainted, and its regional characters is one of the main differences of the Late Neolithic II.



Fig. 16
Tappe Ebrāhim Ābād.
Simple Buff Ware

Simple Buff Ware

The colour of vessels vary from 10YR 7/3 Very Pale Brown to a 5Y 7/3 Pale Yellow, and forms include open vessels with vertical and flaring walls, open mouthed bowls and storage jars (**Fig. 16**). Both flat and concave bases were commonly used, in particular the flat base and straight wall combination. Just over half of the ceramics (56%) underwent sufficient firing, with the remainder under-fired. Tempers were predominantly organic, with some very fine sand used. Surfaces were not well burnished and had thick slips applied. As the ceramics were fired in open kilns the surface sometimes has a greenish tinge. They are handmade and shaped using fingers and subsequently have uneven body diameters. The clay is poorly levigated, and cross-sections reveal several layers of clay. 2049 sherds were recovered from Trench I, 1406 in Trench II and 711 in Trench III. As mentioned, this type was also produced during the Transitional Chalcolithic period without any changes in selection of raw materials and manufacturing technology.

Simple Red Ware

This ware varies in colour from 2.5YR 5/4 Reddish Brown to 2.5YR 6/6 Light Red, lacks decoration and can be classified as crusted pottery. The surface was covered in thick slip and the temper is predominantly organic. Common forms include storage jars, bowls with open mouth and bowls with flat and concave bases. The ceramic cores are dark in colour, indicating the existence of burnt organic substances and reducing firing conditions presumably within open kilns. The ceramics are handmade resulting in uneven bodies, and again the clay is poorly levigated and cross-sections reveal several layers of clay. 559, 289 and 130 Simple Red Ware sherds were recovered from Trenches I, II and III respectively. Like the Simple Buff Ware this type was also produced during the Transitional Chalcolithic period without any changes in selection of raw materials and manufacturing technology.

Ebrāhim Ābād Painted Ware

A new ceramic type ware recorded in the lower levels of Ebrāhim Ābād, which has not been identified anywhere else within the Central Plateau (**Fig. 17**). From the stratigraphic information we suggest it was used between 5600–5400 BC. The surface colour is 10YR 6/2 Light Brownish Grey, whilst the cores are 10YR 7/3 Very Pale Brown. Decoration consists of two lines of horizontal and vertical zigzag lines that do not intersect, only found on the



Fig. 17
Tappe Ebrāhim Ābād.
Painted Ware

exterior of the vessel. Common forms are open bowls with concave bases, and one example of a jar.

Sialk I Buff Ware

As mentioned in this paper, Sialk I pottery type is found in great quantity in many settlements across the Iranian central plateau²² indicating the establishment of extensive regional contact networks. The pottery of Sialk I of the Sialk North site in the earlier layers was made by simpler technology and fired at a low temperature with chaff temper, while close to the end of this period, ceramics appear of a better quality in respect of raw materials selection, firing at high temperatures and so forth. The Sialk I pottery of Ebrāhim Ābād is predominantly 10YR 7/3 Very Pale Brown in colour, and is decorated with simple geometric designs, in particular parallel horizontal lines with triangles or lozenges in the intervening spaces (**Figs. 18; 19**). Almost 60 % of the Sialk I Buff pottery from Ebrāhim Ābād was decorated on both surfaces, with a greater number decorated on the interior rim. The most common

form are large open bowls with concave bases. The ceramics are handmade resulting in an uneven body, with poorly levigated clay and organic temper. Over 70 % of the ceramics were under-fired. 23 sherds were found in Trench I, 20 in Trench II and 65 in Trench III.

Black on Red Painted Ware

This type of ceramic was not previously reported within the Qazvin Plain. Eight sherds were collected in Trench I, 38 in Trench II and none in Trench III. The surface colour varies from 2.5YR 6/6 Light Red to 5YR 6/4 Light Reddish Brown, with similarly coloured cores. Decoration consists of geometric designs including horizontal lines, zigzags and wide lines. 61 % of the ceramics from Ebrāhim Ābād were sufficiently fired with both organic and inorganic temper used including very fine sand. The most common forms are open bowls with concave bases.

Ceramics of the Transitional Chalcolithic

In this paper we propose that the Neolithic period of the Iranian Central Plateau ended around 5200 BC with rapid changes in many aspects of human societies. From the chronological perspective, the ceramic assemblages provide clear indications of

²² Voigt/Dyson 1992.



Fig. 18
Sialk I type pottery
sherd from Tappe
Češme 'Ali

the differences between the Neolithic and Chalcolithic period. The Chalcolithic ceramic types from Tappe Ebrāhim Ābād consist of:

Češme 'Ali (Sialk II) Ware

Češme 'Ali fine ware is usually burnished with fine slip applied. The examples from Ebrāhim Ābād had simple geometric decoration, even though more elaborate designs are known from Češme 'Ali, Sialk and Zāge, and were generally found within the higher layers of the site's stratigraphy. A total of 485 sherds were recovered, comprising 7% of the entire ceramic assemblage. Surface colour varies from 10R 6/6 Light Red to 10YR 7/3 Very Pale Brown, and both organic and inorganic tempers were used, including fine sand. The most common forms were bowls. The ceramics were generally well-fired. In Tappe Pardis the ceramics were manu-

factured in the workshop area and fired in kilns at high temperatures above 850°. Some ceramics were made using a wheel. We suggest the Češme 'Ali ceramic type only occurs at the beginning of this period in Ebrāhim Ābād and for this reason there is no evidence of this type with a careful design and elaborated motif.

Standard/Crusted Zāge Ware

This type of ceramic was firstly found at Zāge²³ and named as Zāge Standard which is also known as Crusted Ware. Zāge Standard type was also found in the Transitional Chalcolithic layer of Tappe Sialk North. Found predominantly within the upper layers of Ebrāhim Ābād, Crusted Zāge Ware ranges are invariably 10YR 7/4 Very Pale Brown to 10YR 7/3 Very Pale Brown in colour, with a fine sand covering the exterior of the vessel. The inside, however, had a fine slip applied and it is likely that they were used for cooking as traces of heat are visible at the base. The most common forms are large open bowls with a vertical rim and flat base. They were not fired at temperatures above 850°.²⁴

Painted Zāge Ware

First identified at the site of Zāge, this ware has been found at a number of sites within the Qazvin Plain,²⁵ and was found mostly within the upper layers of Ebrāhim Ābād (**Fig. 20**). There were 253 sherds in Trench I, 116 in Trench II and 64 in Trench III. Surface colour ranges from 10YR 7/3 Very Pale Brown to 10R 6/6 Light Red, and decoration consists primarily of large zigzag bands. Common forms include open bowls with straight, oblique or carinated walls, with concave or flat bases.²⁶ Both organic and inorganic temper was used, and the ceramics were well-fired.

Floral remains of Čahār Bone and Ebrāhim Ābād

During the excavations at Čahār Bone and Ebrāhim Ābād samples of soil were removed from all contexts containing cultural deposits, in particular ash layers, burnt soil, pits and hearths, for flotation. Light and heavy fractions were separated and gathered, and all plant samples were examined and reviewed by stereomicroscope. Samples were then

²³ Malek Shahmirzadi 1977.

²⁴ Fazeli Nashli/Djamali 2003 (1381).

²⁵ Fazeli Nashli/Abbasnezhad Sereshti 2005.

²⁶ Fazeli Nashli 2001.

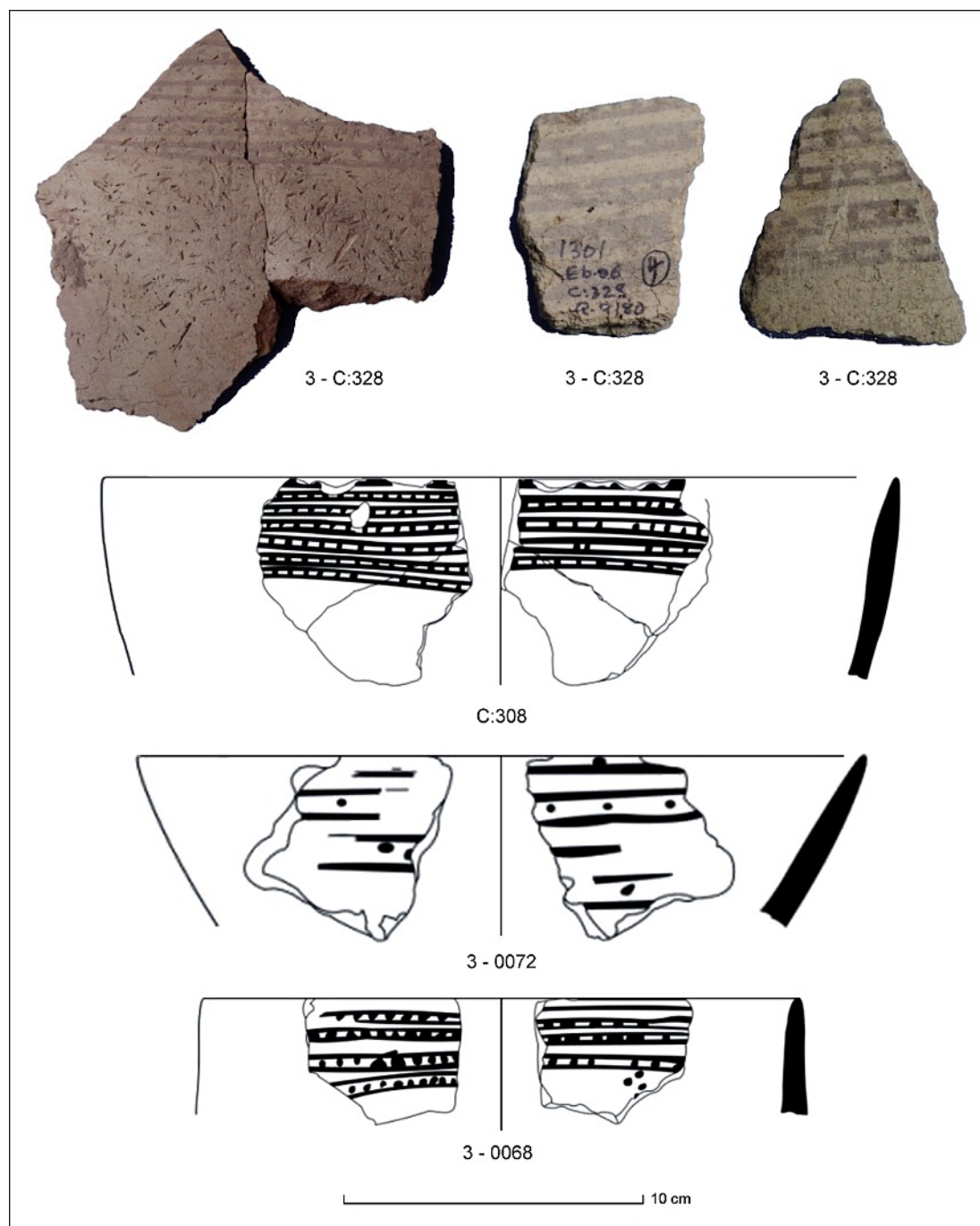


Fig. 19
Sialk I type pottery
sherd from Tappe
Ebrāhim Abād

classified into domestic grain groups such as food plants, corns, and wild grains. To date, no such environmental analysis has been undertaken at Late Neolithic sites within the Central Plateau, and as such the present study is the first archaeobotanical (and also archaeozoological – see below) study of subsistence strategies in the region.

A small number of seeds and charcoal residues were recovered from Čahār Bone, including *Triticum dicoccum*, *Triticum* free threshing, *Hordeum* sp., six-row barley as well as small legumes. Other cereal seeds were obtained but were unrecognisable as they had been too badly damaged by burning and breaking. A larger amount of wild plants

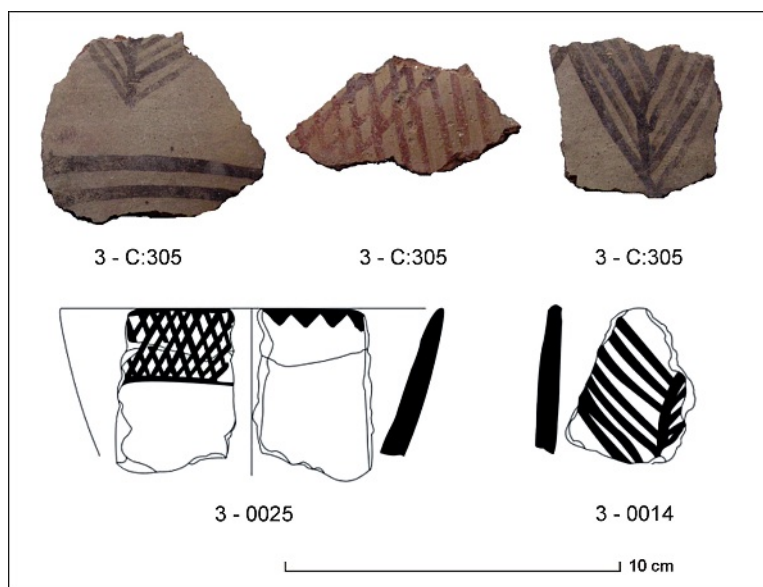


Fig. 20
Painted Zāge
Ware from Tappe
Ebrāhim Ābād

were identified than domestic varieties, with 93 wild species identified. These included *Gramineae*, *Chenopodiaceae*, large *Compositae*, *Crucifera*, and *Aegilops*.

A greater number of carbonised plant remains were recovered from Ebrāhim Ābād (**Fig. 21**). Domesticated species include *Triticum dicoccum*, *Triticum* free threshing, hulled *Hordeum*, *Hordeum vulgare*, *Triticum* sp., lens, *Vicia*, *Pisum*, *Triticum hexaploid* rachis, *Hordeum vulgare* rachis, *Hordeum* sp. rachis, cereal culm node, small legume, *Gramineae*, *Chenopodiaceae*, large *Compositae*, *Cyperaceae*, medicago, fumaria, *Rubiaceae*, *lithospermum*, *Vicia lathyroides*, *polygonum* sp., and many small legumes. In Trench II context 220 alone, 3000 samples of small legume were recovered, and a similar number was found in other trenches. Also identified

within context 220 were chaff, alfalfa, medicago, and residues of sheep and goat dung suggesting that animals were kept in this area. More than 15 types of wild plants were recognized at Ebrāhim Ābād.

Čahār Bone appears to be a seasonal settlement, with an absence of architectural phases and limited evidence of occupation. The deposition of alluvial sediments between cultural layers is suggestive of intermittent flooding, and the presence of water-loving plants supports such a hypothesis. Furthermore, very few agricultural tools were recovered from the site itself. As such, it is likely that the site lacked systematic agricultural organisation. The archaeobotanical data indicates that there were only a small amount of cereal and food plant remains, a small amount of wild species, the presence of moist-loving wild plants and an absence of agricultural stone tools.

At Ebrāhim Ābād a much greater number and variety of floral remains were recovered, in particular bread wheat and hulled two-rowed barley. Pulses and legumes were also found. Analysis of the floral remains produced striking results: seeds of cereals, pulses and food plants outnumber those of wild plants in the upper levels, but this situation is reversed in the lower strata. In the lowermost levels immediately above virgin soil only wild plants were recorded. Furthermore, some contexts contained bulk amounts of faeces from goats and sheep. In one space within a structure of packed mud in Trench II lay a considerable amount of animal faeces along with cereal husks, alfalfa grains and a kind of fodder grain; these remains reflect the function of the space, which must have been used as an animal shed. Analysis of the faeces resulted in a large percentage of food plant and alfalfa grains as well as cereal husks, which can point towards the kind of plants used as fodder for these animals.

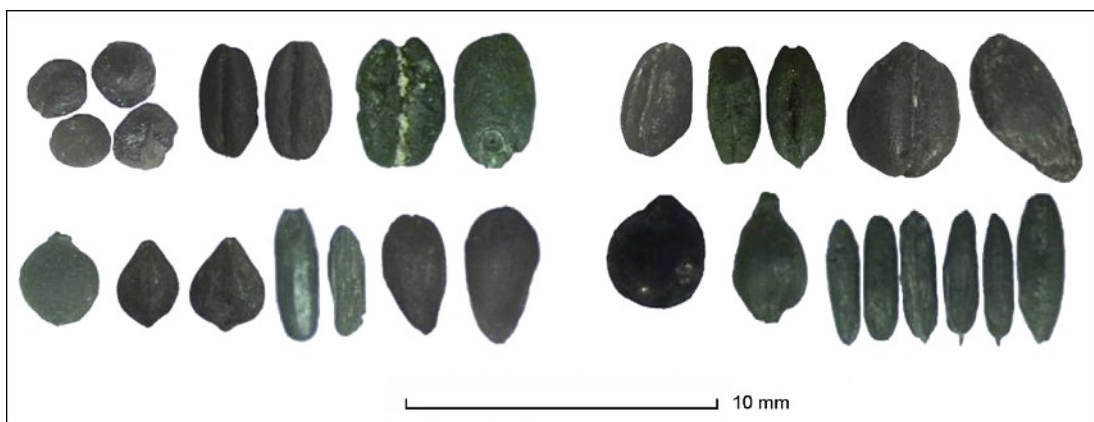


Fig. 21
Plant seeds from
Tappe Čahār Bone
(right) and Tappe
Ebrāhim Ābād (left)

The floral analysis from the Qazvin Plain indicates the emergence of several domesticated cereals, plants and fruits reflecting the development of agriculture in the region. The location of sites close to rivers and springs, and the fertile alluvial plains allowed them to curate a variety of different species. All of the flotation samples contained sedges which grow in wet environments and alongside rivers. Additionally the presence of grasses and wild plants suggest the presence of meadowland in the area. The recovery of sickle blades, grinding stones and other harvesting tools from both sites all point towards the presence of extensive agricultural activities.

Faunal remains of the Qazvin Plain

In line with the wider aims and objectives of the projects, animal bones were recovered during excavation for further analysis. However, systematic sieving was not carried out, resulting in a bias towards large bones of larger animals, whilst smaller bones, for example rodents and fish, are under-represented.²⁷ This is not to say that the sample is not of use in further understanding the use of animals and their relationship with animals in the past.²⁸

The bones from Ebrāhim Ābād were quite fragmented making identification of the element and species difficult. Out of a total of 11,823 bones and bone fragments recovered, 1,018 (9%) were attributed to skeletal element and animal type. Burning was also noted on a number of bones and bone fragments; 12% of the identified bones, and 18% of the unidentified bones were burnt, suggesting that they had either been exposed to fire during processing, or included in waste that was being burnt.

There are three major, or dominant animal types in the identified bone assemblage from Ebrāhim Ābād: sheep/goat, cattle, and equids. Sheep and goat, or caprines, clearly account for the greatest number of identified bones, making up 74% or three-quarters of all bone identified. It has been possible in some instances to differentiate between the two species, but in this report the figures for each will be combined as one count. Cattle are the next most numerous type, making up 12% of the assemblage, and equids comprise 10% of the assemblage. Perhaps the most interesting trend apparent from this preliminary examination of the animal bone assemblage from Ebrāhim Ābād is the low number of wild types recovered and identified,

apart from the equid remains. Very little in the way of gazelle or deer were noted, and although some of the sheep and goat were thought to be wild, they make up a very small percentage of the sheep/goat total count. There is also a narrow range of types identified here, which suggests that this is a site with a relatively specialised pastoral base.²⁹ Sites with very high counts of wild equid species have been interpreted as specialised, even marginal sites, for example Tall-i Muški in the Marv Dašt region of Fars which has been interpreted as having had an economy based on equid hunting.³⁰

A total of 1,652 animal bones and bone fragments were collected during excavations at Čahār Bone, and of these, 70 were identifiable to skeletal element and animal type or species (Fig. 22). This means that only some 4% of the assemblage could be identified, which in turn makes it very difficult to offer even tentative suggestions about what this assemblage might represent in terms of human-animal relationships.

This extremely low percentage for identification is a result of the very poor condition of the bone. The vast majority was extremely fragmented (pre-depositional fragmentation) and the bone was also badly degraded. Quite a high proportion of the assemblage (around 60%) also had thick layers of soil concretions which made any attempt at identification impossible. The identified bones will be presented here – although on their own they cannot be subject to anything more than the most superficial qualitative analysis, nevertheless they do provide information which can be added to the growing body of data of animal bones from sites in the Qazvin Plain.³¹

Sheep and goat were the most numerous of the identified bones, accounting for more than half (59%) of all identified bone. However, when the numbers of cattle, equid, gazelle, pig and wild goat are combined, they account for more than one third (35%) of identified bone, which suggests that the occupants of Čahār Bone were exploiting a range of different animal types for economic purposes. The majority of identified bones came from Trenches II and V. In contrast, no identified bones were recovered from either Trench IV or Trench VIII. Trenches V and VI contained most of the unidentified bone. Very little bone was recovered from Trenches IV and VIII, which might suggest that either these trenches were in areas not used for domestic activities, including waste disposal, or, given the overall bone preservation, might be connected to local soil conditions.

²⁷ Payne 1975.

²⁸ Reitz/Wing 1999; Young 2003.

²⁹ Zeder 1991.

³⁰ Alizadeh et al. 2004.

³¹ Young/Fazeli 2008.

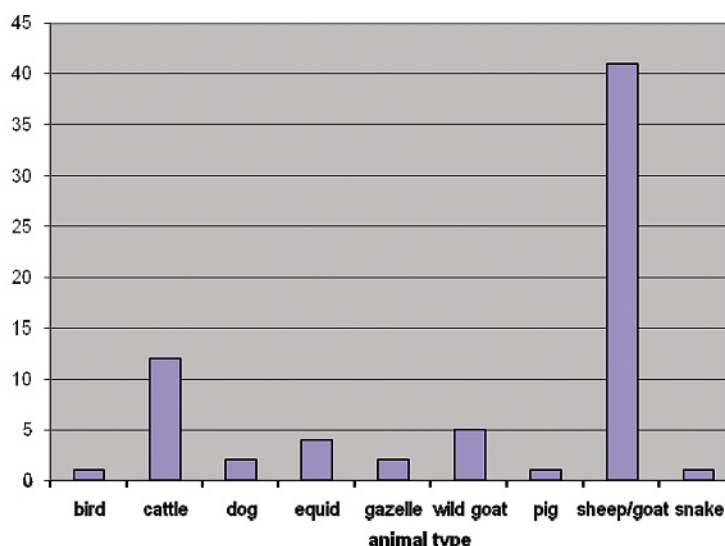
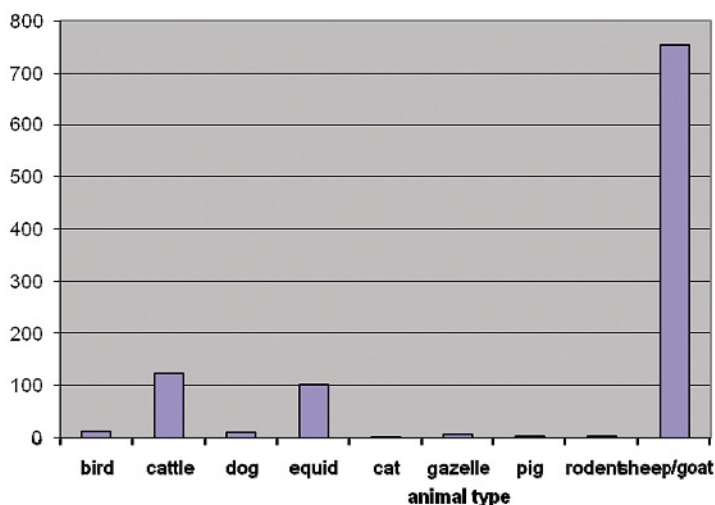


Fig. 22
Tappe Čahār Bone.
Total numbers of
animal types identified

The animal bone assemblage from Ebrāhim Ābād indicates an economy firmly based on the husbandry of sheep and goat, with cattle and equids also of importance (**Fig. 23**). The recovery of the bones by hand, rather than by systematic sieving, means that we are not able to discuss environmental indicators with any confidence, nor are we able to assess the contribution of fish, small furred game or birds, for example, to subsistence at this site. The number of identified animal bones from Čahār Bone is too small to make any analysis or interpretation with any degree of confidence, but this assemblage does add to our overall data for animal bones in the Qazvin Plain. This means that we are developing a relatively comprehensive picture of human-animal relationships in this region diachronically, from sites such as Zāge, Qabrestān

Fig. 23
Tappe Ebrāhim Ābād
2006. Animal types
identified



and Esmā'il Ābād. When this is added to extant published studies³² we will be able to look at such things as long term trends, site function, and changes in function through the lens of animal bone analysis.

Concluding remark

Based on new evidence, the transition from simple Neolithic villages to ranked Chalcolithic towns on the Qazvin plain has been elucidated. From past and present archaeological research within the Qazvin and Tehrān plains, we now have a better understanding about the cultural processes at play during this critical period on the Iranian central plateau. Here, we very briefly summarize the archaeological indicators of the Late Neolithic and the beginning of the Chalcolithic period in the hope of encouraging more research on this subject in the future.

Late Neolithic I (cf. Sialk I.2): There is still no evidence for an aceramic Neolithic within the three important regions of the central Plateau: Qazvin, Tehrān and Kāšān Plains. We hypothesize that the earliest occupation of the Central Plateau dates to ca. 6200 BC. The excavations at Čahār Bone still have not provided us with a valuable insight to study village life of this period I occupation in the region.

The absence of Čahār Bone pottery types from Zāge and Ebrāhim Ābād, despite the chronological overlap in occupation, appears to be the result of settlement complexity rather than indicative of the absence of cultural contacts. A long-term five year project was begun in 2008 on the Kāšān Plain. In the first two seasons, the site of Sialk North has been vertically excavated; next season the site will be excavated horizontally. At present, Sialk North is the only site within the three above-mentioned regions which has valuable data on the Late Neolithic I period.

Late Neolithic II (cf. Sialk I.3-5): Preliminary observations suggest that regional contacts were in place within the Central Plateau before the Chalcolithic period. The Late Neolithic II period has regional characteristics. For example, from our preliminary observation it seems that bread wheat cultivation and the domestication of cattle, goat and sheep signal a permanent sedentary village life from 5600 BC. Furthermore, we assume that the earliest occupation within the Tehrān plain appeared close to the end of the Late Neolithic. Again the main

³² For a summary, see Young/Fazeli 2008.

problem of this period is our lack of evidence from excavated sites such as Češme 'Ali, Pardis and Ebrāhim Ābād. These sites present vertical data which are most valuable for chronological aims rather than for studying the other aspects. Ebrāhim Ābād, with at least five meters of cultural materials dated to this period, is very valuable for further studies.

Transitional Chalcolithic I: Within the Tehrān plain, the site of Tappe Pardis was excavated horizontally in two seasons.³³ This research has shown that the craft area was separated from the domestic/residential sections. Six meters of kiln remains in a 400 meter square, the discovery of wheel thrown ceramics, and lots of tools related to ceramic production suggest a significant change in the organization of production during the Transitional Chalcolithic period. Thus, Tappe Pardis was defined as a specialized pottery-producing village. Using available evolutionary models, this site might be viewed as a case of "workshop industry" distinguished by "increased scale and efficiency of production by specialist producers, often in relatively small-scale family workshops".³⁴

Intra- and inter-regional interaction were established on the Central Plateau in the Neolithic to Chalcolithic transition as evidenced by the wide distribution of Sialk I pottery, and the presence of Sialk II ceramics in the upper levels of Ebrāhim Ābād. Animal bones and plant remains from Zāge and Ebrāhim Ābād within the Qazvin Plain indicate exploitation of domesticated animals and plants during this period.³⁵ Stylistically and technologically, the ceramics of this period within the Qazvin Plain also show a variation in production that is different from the Neolithic period. In 2001, excavations at Zāge provided important evidence of a ceramic production area separate from the residential section.³⁶ We propose that future studies on the transition to the Chalcolithic period within the Qazvin Plain should focus on excavating the upper layers of Ebrāhim Ābād to study village life, and the south part of Zāge for understanding the rise of large-scale craft production.

Acknowledgment

The authors would like to thank Dr Christopher Thornton for his comments and suggestions on this paper.

Bibliography

- Alizadeh et al. 2004
A. Alizadeh/N. Kouchoukas/T. J. Wilkinson/A. M. Bauer/M. Mashkour, Human-environment interactions on the upper Khuzestan Plains, Southwest Iran. Recent investigations. *Paléorient* 30, 2004, 69–88.
- Coningham et al. 2004
R. A. E. Coningham/H. Fazeli/R. L. Young/R. E. Donahue, Location, location, location: A pilot survey of the Tehran Plain in 2003. *Iran* 42, 2004, 1–12.
- Fazeli et al. 2004
H. Fazeli/R. A. E. Coningham/C. M. Batt, Cheshmeh-Ali revisited: Towards an absolute dating of the Late Neolithic and Chalcolithic of Iran's Tehran Plain. *Iran* 42, 2004, 13–23.
- Fazeli et al. 2001
H. Fazeli/R. A. E. Coningham/A. M. Pollard, Chemical characterisation of the Late Neolithic and Chalcolithic pottery from the Tehran Plain, Iran. *Iran* 39, 2001, 55–71.
- Fazeli et al. 2007
H. Fazeli/R. A. E. Coningham/R. L. Young/G. K. Gillmore/M. Maghsoudi/H. Raza, Socio-economic transformations in the Tehran Plain: Final season of settlement survey and excavations at Tepe Pardis. *Iran* 45, 2007, 267–286.
- Fazeli et al. 2005
H. Fazeli/E. H. Wong/D. T. Potts, The Qazvin Plain revisited: A reappraisal of the chronology of the Northwestern Central Plateau, Iran, in the 6th to 4th millennium BC. *Ancient Near Eastern Studies* 42, 2005, 3–82.
- Fazeli Nashli 2001
H. Fazeli Nashli, Social complexity and craft specialization in the Late Neolithic and Early Chalcolithic period in the Central Plateau of Iran. Ph. D. thesis, Dept. of Archaeology (Bradford 2001)
- Fazeli Nashli/Abbasnezhad Sereshti 2005
H. Fazeli Nashli/R. Abbasnezhad Sereshti, Social transformation and interregional interaction in the Qazvin Plain during the 5th, 4th and 3rd millennia B.C. *Archäologische Mitteilungen aus Iran und Turan* 37, 2005, 7–26.
- Fazeli Nashli/Djamali 2003 (1381)
H. Fazeli Nashli/M. Djamali, Specialized pottery production. In: M. Azarnoush (ed.), *The first Symposium of Archaeometry in Iran: The role of sciences in archaeology. Summary of articles (Tehran 2003 (1381))* 203–224. (in Persian)
- Gillmore et al. 2009
G. K. Gillmore/R. A. E. Coningham/H. Fazeli Nashli/R. L. Young/M. Maghsoudi/C. M. Batt/G. Rishworth, Irrigation on the Tehran Plain, Iran: Tepe Pardis – the site of a possible neolithic irrigation feature? *Catena* 78, 2009, 285–300.
- Majidzadeh 1976
Y. Majidzadeh, *The early Prehistoric cultures of the Central Plateau of Iran: An archaeological history of its development during the fifth and fourth millennia B.C.* Ph.D. dissertation, Department of Near Eastern Languages and Civilizations (Chicago 1976)
- Majidzadeh 1981
Y. Majidzadeh, Sialk III and the pottery sequence at Tepe Ghabristan: The coherence of the cultures of the Iranian Plateau. *Iran* 19, 1981, 141–146.

³³ Fazeli et al. 2007.

³⁴ Van der Leew 1977; Rice 1981; Sinopoli 1991.

³⁵ Mashkour et al. 1999; Young/Fazeli 2008.

³⁶ Fazeli Nashli/Djamali 2003 (1381).

- Malek Shahmirzadi 1977
S. Malek Shahmirzadi, Tepe Zagheh: A sixth millennium B.C. village in the Qazvin Plain of the Central Iranian Plateau. Ph.D. Dissertation, Pennsylvania University (Philadelphia 1977).
- Malek Shahmirzadi 1990
S. Malek Shahmirzadi, Private houses at Zagheh: A sixth millennium B.C. village in Iran. *Bulletin of the Ancient Orient Museum* 11, 1990, 1–23.
- Malek Shahmirzadi 2006
S. Malek Shahmirzadi (ed.), Sialk. The oldest fortified village of Iran. Sialk Reconsideration Project, Final Report (Tehran 2006).
- Mashkour et al. 1999
M. Mashkour/M. Fontugne/C. Hatté, Investigations on the evolution of subsistence economy in the Qazvin Plain (Iran) from the Neolithic to the Iron Age. *Antiquity* 73, 1999, 65–76.
- McCown 1942
D. E. McCown, The comparative stratigraphy of early Iran. *The Oriental Institute of the University of Chicago. Studies in Ancient Oriental Civilization* 23 (Chicago 1942).
- Mollasalehi et al. 2006
H. Mollasalehi/M. Mashkour/A. Chaichi Amirkiz/R. Naderi, An introductory report of the archaeological investigation: Results of the stratigraphy and chronology of the prehistoric Zaghe area in the Qazvin Plain in 2004 (1383 ah). *Bastān Šenāsi* 2, 2006.
- Negahban 1977
E. O. Negahban, Preliminary report of Qazvin Expedition: Excavation of Zaghe, Qabristan, Sagzabad (1971–72). *Marlik* 2, 1977, 26–44.
- Negahban 1979
E. O. Negahban, A brief report on the Painted Building of Zaghe (late 7th – early 6th millennium B.C.). *Paléorient* 5, 1979, 239–250.
- Payne 1975
S. Payne, Partial recovery and sample bias. In: A. T. Clason (ed.), *Archaeozoological studies* (Amsterdam 1975) 7–17.
- Reitz/Wing 1999
E. J. Reitz/E. S. Wing, *Zooarchaeology* (Cambridge 1999).
- Rice 1981
P. M. Rice, Evolution of specialized pottery production: A trial model. *Current Anthropology* 22, 1981, 219–240.
- Schmidt 1935
E. F. Schmidt, Excavations at Rayy. *Bulletin of the University Museum* 5, 1935, 25–27.
- Schmidt 1936
E. F. Schmidt, Rayy research 1935, Part I. *University Museum Bulletin* 6, 1936, 79–87.
- Sinopoli 1991
C. M. Sinopoli, *Approaches to archaeological ceramics*. (New York 1991).
- Tala'i 1984
H. Tala'i, Notes on bronze artifacts at Sagzabad in Qazvin Plain, Iran, circa 1400 B.C. *Iranica Antiqua* 19, 1984, 1–42.
- Van der Leew 1977
S. Van der Leew, Towards the study of the economics of pottery making. In: G. W. Van Beek/R. W. Brandt/W. Goeman-van Waateringe (ed.), *Ex horreo* (Amsterdam 1977) 68–76.
- Vidale et al. n.d.
M. Vidale/H. Fazeli Nashli/P. Bianchetti/G. Guida, The evolution of ceramic manufacture technology during the Late Neolithic and Transitional Chalcolithic periods at Tepe Pardis, Iran, n.d.
- Voigt/Dyson 1992
M. Voigt/R. H. Dyson, Jr., The chronology of Iran, 8000 to 2000 B.C. In: R. W. Ehrich (ed.), *Chronologies in Old World archaeology* (Chicago, London 1992) 122–178.
- Young 2003
R. Young, Agriculture and pastoralism in the Late Bronze and Iron Age, North West Frontier Province, Pakistan: An integrated study of the archaeological plant and animal remains from rural and urban sites, using modern ethnographic information to develop a model of economic organisation and contact. *British Archaeological Reports, International Series* 1124 (Oxford 2003).
- Young/Fazeli 2008
R. Young/H. Fazeli, Interpreting animal bones in Iran: Considering new animal bone assemblages from three sites in the Qazvin Plain within a broader geographical and chronological perspective. *Paléorient* 34, 2008, 153–172.
- Zeder 1991
M. A. Zeder, Feeding cities: Specialized animal economy in the Ancient Near East. *Smithsonian Series in Archaeological Inquiry* (Washington, London 1991).
- Zeder 2005
M. A. Zeder, A view from the Zagros: New perspectives on livestock domestication in the Fertile Crescent. In: J.-D. Vigne/J. Peters/D. Helmer (ed.), *First steps of animal domestication. New archaeozoological approaches. Proceedings of the 9th conference of the International Council of Archaeozoology*, Durham, August 2002 (Oxford 2005) 125–146.

Hassan Fazeli Nashli
Amir Beshkani
Armineh Markosian
Hengameh Ilkani
Rahmat Abbasnegad Seresty
Department of Archaeology
Faculty of Letters and Humanities
University of Tehran
Tehran
Iran

Ruth Young
School of Archaeology and Ancient History
University Road
Leicester, LE1 7RH
U. K.

Summary

This paper presents scientific and stratigraphic dates from the sites of Tappe Čahār Bone and Tappe Ebrāhim Ābād in the Qazvin plain, along with analyses of ceramics, plant and animal remains from each site. Understanding the form and material markers of the Chalcolithic at these two sites forms part of a larger project, aimed at exploring increasing social complexity and developing a comprehensive chronology for the region, which can be linked to chronologies across Iran. It is also important to be able to offer new models based on the results of excavation and analysis which can help in understanding the move from the Neolithic to the

Chalcolithic in the Qazvin Plain, and in turn can be compared to neighbouring regions such as the Teheran Plain. From the new chronological results and previously published C14 dates from the Teheran and the Qazvin plain sites, we have proposed a better picture for the chronology of the Iranian central plateau. The results of excavation, scientific dating estimates, analysis of ceramics, and analysis of plant and animal remains from of Tappe Čahār Bone and Tappe Ebrāhim Ābād are presented here in order to both understand the specific occupation periods of each site and the economies, and also to consider the implications these have for our understanding of the Chalcolithic in the Qazvin Plain and beyond.